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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,516	04/11/2001	Terry Reiss	AM4938.01/T37310	2537
32588	7590	11/20/2003	EXAMINER	
APPLIED MATERIALS, INC. 2881 SCOTT BLVD. M/S 2061 SANTA CLARA, CA 95050			KASENGE, CHARLES R	
			ART UNIT	PAPER NUMBER
			2125	5

DATE MAILED: 11/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/833,516

Applicant(s)

REISS ET AL.

Examiner

Charles R Kasenge

Art Unit

2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Bunkofske et al. U.S. Patent 6,442,445. Referring to claim 1 and 15, Bunkofske discloses a fault detection method and apparatus (col. 5, lines 24-31) comprising: sensing a group of correlating operational parameters of a semiconductor processing tool operating under a recipe (col. 2, lines 63-66); sensing at least one non-correlating operational parameter of the tool operating under the recipe (col. 2 and 3, lines 66-67 and 1-10); forming an input vector including the group of correlating operational parameters and the at least one non-correlating operational parameter (col. 3, lines 46-53); comparing the input vector to a reference data library comprising vectors from previous tool runs utilizing the recipe (col. 11, lines 34-40); selecting from the reference data library one

Art Unit: 2125

or more nearest neighbor vectors to the input vector based upon a similarity with the group of correlating operational parameters (col. 3, lines 22-28); and generating a fault detection index from the selected nearest neighbor vectors (col. 6, lines 33-46).

Referring to claims 2-5 and 16-19, Bunkofske discloses a method of claim 1 wherein sensing the group of correlating operational parameters comprises sensing operational parameters relating to tool pressure, tool temperature, and tool power (col. 1, lines 7-13). Bunkofske discloses the method of claim 1 wherein sensing the group of correlating operational parameters comprises sensing operational parameters relating to positioning of a wafer within the tool (col. 7, lines 5-13).

Referring to claims 10 and 11, Bunkofske discloses the method of claim 1 further comprising: including in the input vector a value of a passive-inclusive sensor or cluster sensor (col. 3, lines 29-33), ignoring the value of the passive-inclusive sensor in selecting the nearest neighbor vectors; and including the value of the passive-inclusive sensor in generating the fault detection index (col. 3, lines 22-28). The Office interprets Bunkofske's method of "measuring a set of tool variables with sensors" to include all types of sensors including passive-inclusive sensors, cluster sensors, and synthetic sensors.

Referring to claim 12, Bunkofske discloses the method of claim 11 wherein the cluster sensor represents a stage in a semiconductor fabrication process when the group of correlating operational parameters is sensed (col. 2 and 3, lines 66-67 and 1-10).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6-9, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bunkofske as applied to claim 1 above, and further in view of Wang et al. U.S. Patent 5,859,964. Bunkofske does not expressly disclose the use of prediction data for the fault detection index. Referring to claims 6-9, 13, and 14, Wang discloses the method wherein the fault detection index is generated by compiling a vector subset from the selected nearest neighbor vectors, combining the vector subset into an output prediction vector, and generating a fault detection index from the output prediction vector (col. 3, lines 21-67). Wang discloses the method of claim 6 wherein the output vector comprises predicted operational parameters, and the fault detection index is generated by combining the predicted operational parameters (col. 3, lines 21-67). Wang discloses the method of claim 7 wherein combining the operational parameters of the output prediction vector comprises: assigning a set of weights to the predicted operational parameters; and adding together the weighted operational parameters and the method of claim 8 wherein the set of weights is assigned based upon the similarity (col. 3, lines 52-67). Wang discloses the method of claim 13 wherein the synthetic sensor is difficult or impossible to measure in real time during operation of the semiconductor fabrication tool, and is assigned to vectors of the library after completion of the processing (col. 10, lines 12-24).

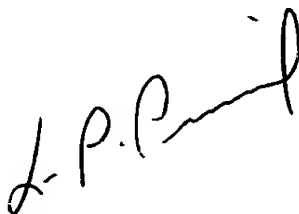
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles R Kasenge whose telephone number is 703 305-8592. The examiner can normally be reached on Monday through Friday, 8:30 - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 703 308-0538. The fax phone number for the organization where this application or proceeding is assigned is 703 746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0538.

CK
November 14, 2003



LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100